



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/813,682	03/31/2004	Engelbertus Antonius Fransiscus Van Der Pasch	081468-0308989	4356
909	7590	02/03/2006	EXAMINER	
PILLSBURY WINTHROP SHAW PITTMAN, LLP			SOUW, BERNARD E	
P.O. BOX 10500			ART UNIT	
MCLEAN, VA 22102			PAPER NUMBER	
			2881	

DATE MAILED: 02/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

21

Office Action Summary	Application No. 10/813,682	Applicant(s) VAN DER PASCH ET AL.	
	Examiner Bernard E. Souw	Art Unit 2881	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on Amdt 10/19/2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>09/20/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Amendment

1. The Amendment filed on 09/26/2005 in response to the Non-Final Office Action dated 06/23/2005 has been entered. The present Office Action is made with all the suggested amendments being fully considered.

The specification has been amended.

Claim 12 has been amended.

Pending in this Office Action are claims 1-22.

Information Disclosure Statement

2. Receipt is acknowledged of information disclosure statement (IDS) submitted on 09/20/2005. The submission is in compliance with the provisions of 37 CFR 1.97.

A signed copy of the information disclosure statement is here enclosed.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3 and 12-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Hill (USPAT 6,137,574).

Hill discloses a lithographic apparatus and method shown in Fig.1, comprising a radiation source 1 configured to provide radiation 9 to an illumination system, as recited in the Abstract/II.1-4 from bottom in combination with column Col.6/II.25-30 and Col.6/II.33-45, the radiation source 1 configured to provide radiation in a first wavelength range λ_1 and in a second wavelength range λ_2 , the second wavelength range being different from the first wavelength range, as recited in Col.6/II.18-20 and Col.15/II.37-45, with a basic arrangement depicted in Fig.1A and recited in Col.17/II.46-60; a support configured to support a patterning device, the patterning device configured to impart the radiation with a pattern in its cross-section; a substrate table configured to hold a substrate; a projection system configured to project the patterned radiation onto a target portion of the substrate, as recited in Col.79/II.35-49 (claim 44). More specifically, Hill uses the interferometry system of Fig.1 in a lithography system shown in Fig.11A, showing a interferometry system 1126 and lithography system 1100, as recited in Col.71/II.28-31.

- ▶ Regarding claims 2 and 13, Hill's system or method shown in Fig.9A employs a filter (879A-D) shown in Fig.9A and recited in Col.65/II.8-26 + 65-67 and Col.66/II.4-5, and/or filter 882M shown in Fig.9A and recited in Col.66/II.33-46.
- ▶ Regarding claims 3 and 14, Hill's system or method shown in Fig.9A employs a radiation director (either one of 841F, 853B-D or 851A-F in Fig.9A) to direct radiation from the second radiation source element to the illumination system.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 5-8, 11, 16-19 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hill.

Hill inherently encompasses all the limitations of claims 5-8, 11, 16-19 and 22, since Hill's radiation source is not restricted to one wavelength (range) only, but includes the entire wavelength range from X-ray, over XUV, EUV (including 13 nm), VUV (including 157 nm to 193 nm), as well as UV (including 150 nm to 350 nm), as recited in Col.71/II.62-65 and Col.10-13, wherein the optics for use in the respective wavelength ranges are all conventional and well known in the art, as expressly recited by Hill in Col.74/II.4-8.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the specific optics appropriate to each respective wavelength range, in order to have maximum transmission and lithographic projection, recited by Hill in Col.74/II.4-8.

One of ordinary skill in the art would have been motivated to modify Hill's versatile and complicated system or method in its various embodiments by eliminating elements or steps that are not needed, since omission of an element and/or its function

is obvious if the function of the element is not desired/required/intended. *Ex Parte Wu*, USPQ 2031 (Bd. Pat. App. & Inter. 1989).

6. Claims 4, 9, 15 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hill in view of Li (USPAT 5,926,298) or Kawakubo (USPAT 6,219,130) or Tanimoto et al. (USPAT 4,870,452) or Nishi (USPAT 5,138,176) or Nakagawa et al. (USPAT 5,184,196) or Nara et al. (USPAT 5,850,279).

Hill discloses all the limitations of claims 4, 9, 15 and 20, as previously applied to the parent claims 1 and 12, except the recitation of specific limitations that are respectively obvious over *either one or more* of the secondary prior art references cited above, to be individually described as follows:

► Li uses the first wavelength range for pattern exposure, while using the second wavelength range for performance test, as recited in Col.5/ll.2-10.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a second wavelength range for performance test, in order the two radiations of different wavelengths do not interfere with each other, as taught by Li in Col.5/ll.6-10.

► Kawakubo uses the first wavelength range for pattern exposure, while using the second wavelength range for alignment, as recited in Col.13/line 47 (claim 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a second wavelength range for alignment, in order the two

radiations of different wavelengths do not interfere with each other, as taught by Li in Col.5/II.6-10.

► Tanimoto et al. use the first wavelength range for pattern exposure, while using the second wavelength range for alignment, as recited in Col.1/II.62-68 and Col.2/II.1-4.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a second wavelength range for alignment, in order the two radiations of different wavelengths do not interfere with each other, as taught by Li in Col.5/II.6-10.

► Nishi uses the first wavelength range for pattern exposure, while using the second wavelength range for alignment, as recited in Col.3/II.55-64.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a second wavelength range for alignment, in order the two radiations of different wavelengths do not interfere with each other, as taught by Li in Col.5/II.6-10.

► Nakagawa et al. use the first wavelength range for pattern exposure, while using the second wavelength range for alignment, as recited in Abstract/II.1-9.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a second wavelength range for alignment, in order the two radiations of different wavelengths do not interfere with each other, as taught by Li in Col.5/II.6-10.

► Nara et al. use the first wavelength range for pattern exposure, while using the second wavelength range for alignment, as recited in Col.1/II.27-34.

► Note, specifically regarding claims 4 and 15, a controlled environment is needed to perform a pattern exposure, whereas in a performance test and/or alignment, a controlled environment is not established.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a second wavelength range for alignment, in order the two radiations of different wavelengths do not interfere with each other, as taught by Li in Col.5/ll.6-10.

In adopting the teaching of each of the secondary prior art(s), one of ordinary skill in the art would have been motivated to eventually take only the secondary teaching of using the second wavelength, while still using the first wavelength according to Hill's, since omission of an element and/or its function is obvious if the function of the element is not desired/required/intended. *Ex Parte Wu*, USPQ 2031 (Bd. Pat. App. & Inter. 1989).

► Specifically regarding claims 4 and 15, application of the first wavelength range for exposure is conventionally performed under controlled environment, in order to achieve high accuracy of pattern transfer, whereas the alignment process with a second wavelength range may be conducted when the controlled environment is not established.

7. Claims 10 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hill in view of Stryer et al. (USPGPUB 2002/0064796).

Hill discloses all the limitations of claims 10 and 21, as previously applied to the parent claims 1 and 12, except the recitation of specific limitation of using the first wavelength range for exposing a first pattern on a first substrate, while using the second wavelength range for making a second exposure on a second substrate

Stryer et al. use the first wavelength range for exposing a first pattern on a first substrate, while using the second wavelength range for making a second exposure on a second substrate, as recited on pg.19, column 1, claim 42.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a second wavelength range for a second exposure on a second substrate, in order the two radiations of different wavelengths do not interfere with each other, as taught by Li in Col.5/ll.6-10.

Double Patenting

Non-Statutory Type Double Patenting

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Obviousness Type Double Patenting

9. Claim 1 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 10/792,909, filed 03/05/2004, issued as USPGPUB 2005/0110965 to the same Assignee. Although the conflicting claims are not identical, they are not patentably distinct from each other because the limitation of claim 1 of the reference US applications is narrower than that of present claim 1. Since the reference application is filed earlier (03/05/2004) than the present application (03/31/2004), according to the MPEP a broader claim stands in conflict with a narrower claim that is filed on an earlier date.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

10. Claim 2 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 10/952,214, issued as USPGPUB 2005/0078292 to the same Assignee. Although the conflicting claims are not identical, they are not patentably distinct from each other because the present claim 2 includes the same limitations as claim 1 of the reference US application, which was filed later (08/25/2204) than the present

Application. Therefore, the present claim 2 is an obvious variation of the reference claim 1.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Final Rejection

11. There is no new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP §706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

RESPONSE TO APPLICANT'S ARGUMENTS

12. Applicant's arguments filed 09/26/2005 have been fully considered but they are not persuasive.

Art Unit: 2881

► Regarding claims 1-3 and 12-14, Applicant's argument that Hill does not disclose or suggest a lithographic apparatus (or a device manufacturing method) is groundless: The column & line numbers cited in the previous Office Action, i.e., Col.6/ll.25-26 and Col.6/ll.33-34 expressly recite the word "lithography system". Applicant has misunderstood Hill's invention as being a mere interferometry system. The real truth is, Hill's invention makes use of an interferometry system as shown in Fig.1 or in a lithography system as shown in Fig.11A, as recited in the Abstract/ll.1-4 from bottom, which is previously already recited in Col.6/ll.31-32 and Col.6/ll.43-45. Accordingly, Hill uses an interferometry system 1126 in a lithography system 1100, as recited in Col.71/ll.28-31.

Furthermore, in claims 1-3 Applicant recites a lithography apparatus only in the preamble, which is here not given a patentable weight. Similarly, in claims 12-14 a device manufacturing method is recited only in the preamble, and hence, does not a patentable weight. A preamble is generally not accorded any patentable weight where it merely recites the intended use of a structure (claims 1-3) and/or the purpose of a process (claims 12-14), and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

The structural limitations recited in the body of claims 1-3 and the process steps recited in claims 12-14 are able to stand alone. They are anticipated by Hill's interferometry system, as recited in the 06/21/2005 Office Action. Therefore, Applicant's

invention is anticipated by Hill and the previous rejections of claims 1-3 and 12-14 are proper.

► Regarding claims 5-8, 11, 16-19 and 22, Applicant's argument that Hill does not disclose or suggest that the radiation sources shown in the 10 embodiments include the entire wavelength range is again not true, because the limitation is expressly recited in Col.74/II.4-6, Col.70/II.56-59 and Col.71/II.62-65.

In the event Applicant meant that Hill's single source does not include the entire wavelength range, neither does Applicant's light source, since a single light source that covers the wavelengths from EUV, VUV, UV to the visible wavelength range simply does not exist. As a matter of fact, Applicant's disclosure about the light source recited in sect.[0020] is not at all better, if not even inferior, than Hill's recitation in Col.74/II.4-6, and again in Col.70/II.56-59 and Col.71/II.62-65, because Applicant's source does not recite the X-ray wavelength region.

Therefore, Applicant's claims 5-8, 11, 16-19 and 22 are obvious or unpatentable over Hill, and hence, the previous rejections of claims 5-8, 11, 16-19 and 22 are proper.

► Regarding claims 4, 9, 15 and 20, Applicant's arguments are all based on the alleged Examiner's error regarding claims 1 and 12, which has been deemed unpersuasive, as recited above. Therefore, Applicant's arguments regarding claims 4, 9, 15 and 20 are unpersuasive.

Applicant's argument that the secondary prior art references of Kawakubo's, Tanimoto's, Nishi's, Nakagawa's or Nara's do not disclose a first wavelength range and a second wavelength range is totally unpersuasive, because claims 4, 9, 15 and 20 are

rejected under § 103, in which the secondary prior art references do not need to recite limitations that are already rejected by the primary prior art reference, in this case Hill's. The same thing with the limitations of a patterning device or a projection device, which is already rejected by Hill's.

Applicant's argument that the secondary reference Li is a non-analogous prior art is unpersuasive, since all the secondary prior art references are applied in the alternative, as unambiguously recited in the statement of rejection by the word "or". This means, even if Li would be considered as non-analogous, the other prior art reference of Kawakubo's or Tanimoto's or Nishi's or Nakagawa's or Nara's would be still applicable to reject claims 4, 9, 15 and 20. In this regard, Li is not even a non-analogous art, since Li discloses a light source having two wavelengths that are used for different purposes, as recited above (Li, Col.5/ll.2-10).

Therefore, Applicant's claims 4, 9, 15 and 20 are obvious or unpatentable over Hill in view of secondary prior art reference of Li or Kawakubo's or Tanimoto's or Nishi's or Nakagawa's or Nara's, and hence, the previous rejections of claims 4, 9, 15 and 20 are proper.

► Regarding claims 10 and 21, Applicant's arguments are based on the alleged Examiner's error regarding claims 1 and 12, which has been deemed unpersuasive, as recited above. Therefore, Applicant's arguments regarding claims 10 and 21 are unpersuasive.

Communications


13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bernard E Souw whose telephone number is 571 272 2482. The examiner can normally be reached on Monday thru Friday, 9:00 am to 5:00 pm..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R Lee can be reached on 571 272 2477. The central fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306 for regular communications as well as for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308 0956.

bes

January 13, 2006


JOHN R. LEE
SUPERVISING PATENT EXAMINER
TECHNOLOGY CENTER 2800